

ENDAT-3857 USERS MANUAL
UNICORN COMPUTER CORP.

ENDAT-3857



For ENDAT-3857 PCB ver. A3 or later

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Installation Notice

The manufacturer recommends using a grounded plug to ensure proper motherboard operation. Care should be used in proper conjunction with a grounded power receptacle to avoid possible electrical shock. All integrated circuits on this motherboard are sensitive to static electricity. To avoid damaging components from electrostatic discharge, please do not remove the board from the anti-static packing before discharging any static electricity to your body, by wearing a wrist-grounding strap. The manufacturer is not responsible for any damage to the motherboard due to improper operation.

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Specification:

Model	ENDAT-3857
SoC Supporting	Intel® Atom™QC E3845 /2MB cache/1.91GHz / TDP=10W Intel® Atom™ DC E3827 /1MB cache/1.75 GHz / TDP=8W Intel® Atom™QC J1900 /2.0GHz Up to 2.4GHz /2MB cache / TDP=10W
Memory	1 x 204-Pin DDR3 SODIMM socket support DDR3L-1333 up to 8 GB (Non-ECC)
BIOS	Phoenix UEFI
Ethernet	2x Intel® 82583V PCI-E Gigabit LAN
VGA	Intel® Gen7 w/4EUs graphics engines (@ 542MHz/792MHz [Turbo]) Supports DX 11, OGL 3.0, OCL 1.1, OGLES 2.0, and Full HW acceleration, decode: H.264, MPEG2/4, VC-1, WMV9. Encode: H.264, MPEG2 Shared memory ; Maximum resolution up to 1920 x 1200
LVDS interface	24-bit dual channel via CH7511B through eDP Support 18/24/36/48bit LVDS with backlight control (maximum resolution 1920 x 1080)
DisplayPort	Video Display Port (Mini DP)
Dual view	CRT + DP, CRT + LVDS, DP + LVDS
Serial	2 ports RS-232 with power selector (+12V / Ring-in / +5V)
RS 422 / 485	by COM2
SATA	1 x SATA2 connector with AHCI support
USB	USB 2.0 x 2 (1 external + 1 internal) & USB 3.0 x 1 (1 external)
Expansion	2x Mini PCI-E (1 x full-sized, 1 x half-sized) Slot, Half-sized support Mini PCIe or Mini or USB interface. Full-sized support mSATA or Mini PCIe and USB interface.
Watch Dog Timer	On-chip supports 1 to 255 seconds / minutes
AUDIO	Intel® Atom™ SoC built-in HD Audio controller Realtek HD Codec w/speaker 1.2W amplifier
Power Supply	9V~ 24V DC
Form Factor	102mm x 147mm (4" x 5.8")

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Back Panel I/O

Model	ENDAT-3857
Back Panel I/O	1 x PS2 Keyboard & Mouse Double-decker connector
	1 x VGA
	1 x Mini DP Display port
	2 x RJ-45 Connector
	1 x USB(2.0) Connector & 1 x USB(3.0) Connector
	1 x SPK-out

I/O Onboard

I/O Onboard	1 x PS2 Keyboard & Mouse with 2.0mm Pin Header
	COM1 & COM2 with 2.0 mm Box Header
	1 x USB 2.0 with 2.54mm Pin Header
	Speaker out, Line-in, CD-in, MIC-in, SPDIF with 2.0mm Pin Header
	8-bits digital I/O for CMOS/TTL level (4 bit input / 4 bit output) with 2.0mm Pin Header
	1 x SPDIF + 1 x SM BUS with 2.0mm Pin Header

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Chapter 1. Introduction

In order to cope with the challenges of the system performance issues and demand of much more visually embedded system in diverse application, ENDAT-3857 system board provides the ultimate solution with Intel® ATOM Bay Trail-I Intel® Atom™ QC E3845, Intel® Atom™ DC E3827 and Intel® Atom™ QC J1900 Processors. This package offers a high performance Intel® CPU with optimal power efficiency on the embedded market.

ENDAT-3857 supports Dual channel DDR3L-1333MHz memory. The maximal capacity is up to 8GB.

ENDAT-3857 integrated Intel® Gen7 w/4EUs graphics engines which supports DX11, OGL 3.0, OCL 1.1, OGLES 2.0.

ENDAT-3857 supports various kinds of display include VGA, DisplayPort and LVDS; Dual display is also feasible.

ENDAT-3857 provides two Mini-PCle slots to support one half-sized Mini-PCle interface and full-sized M-SATA interface.

The ideal solutions of ENDAT-3857

- POS system
- KIOSK
- Vehicle system
- Interactive system
- Industrial controller
- Gaming system
- Medical system
- Embedded system equipment

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1-1. Features

Basic Feature:

- Intel® Atom™ QC E3845 (1.91GHz, 2MB cache)
Intel® Atom™ DC E3827 (1.75GHz, 1MB cache)
Intel® Atom™ QC J1900 (2.0GHz up to 2.4GHz, 2MB cache)
- Dual channel DDR3L SO-DIMM socket supports 1333 MHz up to 8 GB **(Non-ECC)**.
- CRT and DisplayPort video display interface.
- 24-bit LVDS dual channel interface.
- Dual PCI Express interface Gigabit Ethernet chip on-board.
- One SATA 2.0 port With ACHI.
- USB 2.0 x 2
1 external + 2 internal / USB port 2 Full-sized Mini PCI-E Slot, USB port 3 share Half-sized Mini PCI-E slot or 2.54mm pin headers).
- USB 3.0 x 1 (1 external)
- Two Mini-PCle slots :
Half-sized for Mini-PCle or or USB interface.
Full-sized Auto switch for Mini-PCle or mSATA and Support USB interface.
- Built-in HD Audio with 1.2W amplifier.
- Digital IO 4In/4Out.
- Two functional serial ports.
- +9~24V DC input power

Software Support

- Drivers for major embedded operating systems: Linux, Windows 8, Windows7, and Windows Embedded.

Ordering information:

Standard edition:

ENDAT-3857-19 (Intel® Atom™ QC E3845)
ENDAT-3857-17 (Intel® Atom™ DC E3827)
ENDAT-3857-24 (Intel® Atom™ QC J1900)

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1-2. Unpacking

The motherboard comes securely packaged in a sturdy cardboard shipping carton. In addition to the User's Manual, the motherboard package includes the following items:

- ENDAT-3857 System Board
- One SATA HDD Cable
- Two Serial (2.0mm) port Cable.
- LCD cable (Optional).
- DP Cable (Optional).
- CD with Driver utilities for on-board chipsets, VGA and LAN adapter

If any of these items is missing or damage, please contact the dealer whom you purchase the motherboard from. Save the shipping material and carton in the event that you want to ship or store the board in the future.

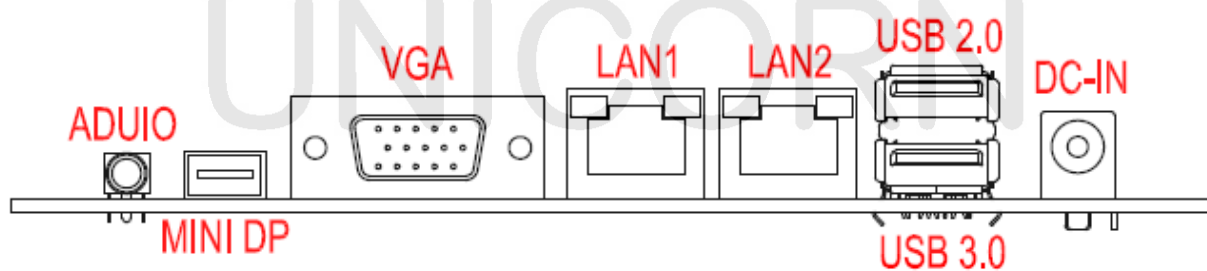
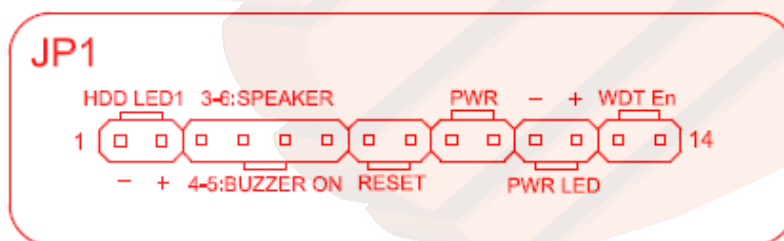
Note: Leave the motherboard in its original package until you are ready to install it!

1-3. Electrostatic Discharge Precautions

Make sure you properly ground yourself before handling the motherboard, or other system components. Electrostatic discharge can easily damage the components. Note: You must take special precaution when handling the motherboard in dry or air-conditioned environments.

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1-4. MOTHERBOARD LAYOUT.



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Chapter 2. Setting up the Motherboard

2-1. Connectors / Headers and Jumpers

Connectors Overview:

Function	Connectors
Cooling Fan Connector	FAN1
DC Power Supply Connector	CN7
HDD Power Connector	HDDPWR1
USB3.0 Port0 Connector	CN4
USB 2.0 Port1 Connector	CN4
USB 2.0 Port2	Full-sized Mini PCIe
USB 2.0 Port3 Header	J4 / Half-sized Mini PCIe
LAN 1 Port Connector	CN5
LAN 2 Port Connector	CN6
SATA Connector	SATA1
DDR3L RAM Socket	DIMM1
CRT Output Connector	CN10
Mini DP Port Connector	CN8
24/48 bit LCD Panel Connector	LVDS1
PWM Backlight Control Connector	CN3
COM1 Box Header	CN2
COM2 Box Header	CN1
HD Audio Speaker Output	CN9
Half-sized Mini-PCIe Socket	MPCIE2
Full-sized Mini-PCIe Socket	MPCIE1
Battery Connector	J5
PS/2 Mouse/KB Pin Header	J1
SM BUS Pin Header	SMB1
Speak Out, Line-Out Pin Header	J7
Line-In 、MIC-In Pin Header	J6
SPDIF Pin Header	J8
DIGITAL I/O Pin Header	J3

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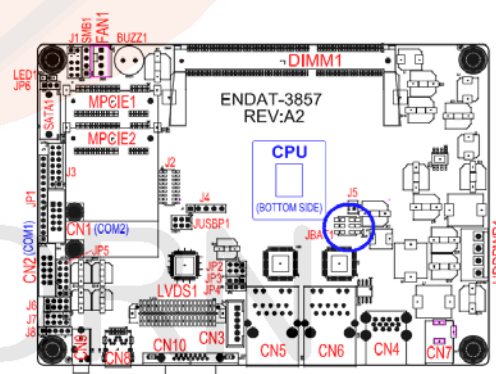
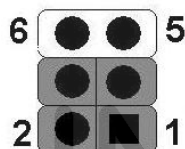
Jumpers Overview:

Function		Connectors
LVDS1	LCD Voltage (LCD-PWR) Select	JP4
	LCD Backlight Voltage (VBL) Select	JP2
	LCD Backlight Active (BLEN) Voltage Select	JP3
Clear CMOS		JBAT1
COM1/2 Voltage Selector		JP5,
SATA Port Pin7 Select (for +5V/GND)		JP6
USB Port3 share to Half-sized Mini PCIe slot		JUSBP1
Header for Case Panel		
HDD LED		JP1 Pin1(-)-2(+)
External Speaker		JP1 Pin3(-)-6(+)
Buzzer On/Off		JP1 Pin4-5
Hardware Reset Switch		JP1 Pin7-8
ATX Power Supply On/Off Switch		JP1 Pin9-10
Power LED		JP1 Pin11(-)-12(+)
WDT Function Enable/Disable		JP1 Pin13-14

JBAT1: CMOS Data Clear & Clear ME Register (2x3 with 2.0mm)

RTCRST_N	
Normal	2-4*
Clear CMOS	4-6

SRTC_RST_N	
Normal	1-3*
Clear CMOS REG	3-5

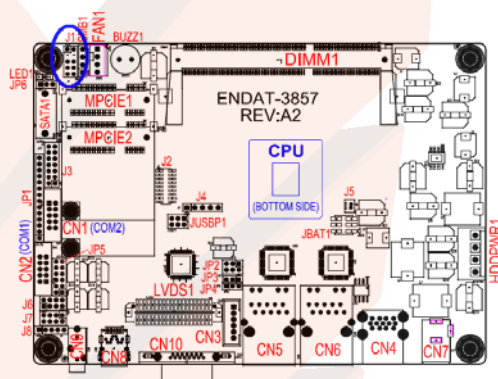
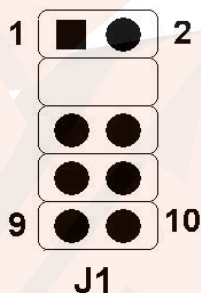


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J1: PS/2 Keyboard / Mouse Header (2x5 with 2.0mm)

Pin No.	Signal (KB)	Pin No.	Signal (MS)
1	KB Data	2	MS Data
3	KEY	4	KEY
5	GND	6	GND
7	+5V(DC)	8	+5V(DC)
9	KB_CLK	10	MS_CLK



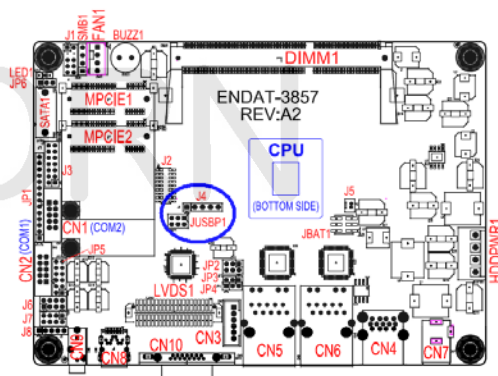
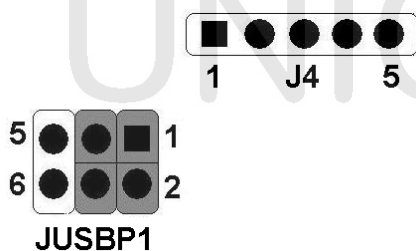
J4: USB Port3 Pin Header (1x5 with 2.54mm)

Pin No.	Function
1	USB_VCC
2	USBD-
3	USBD+
4	USB_GND
5	KEY

JUSBP1: USB Port3 share to Half-sized Mini PCIe slot (2x3 with 2.0mm)

	J4 *	Mini PCIE slot
JUSB1	1-3,2-4	3-5,4-6

Notice: The JUSBP1 jumper setting for USB Port3 share to Half-sized mini PCIe slot.

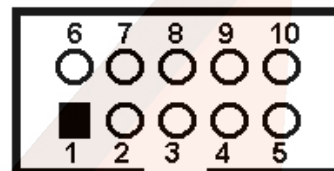


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CN1(COM2),CN2(COM1): Serial port Box Headers (2x5 with 2.0mm)

Pin No.	Function	Pin No.	Function
1	DCD	6	DSR
2	RXD	7	RTS
3	TXD	8	CTS
4	DTR	9	RI
5	GND	10	N.C.



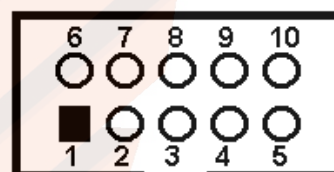
Serial Cable D-SUB Type Connector Pin Mapping

Pin No.	Function	Pin No.	Function
1	DCD	6	DSR
2	RXD	7	RTS
3	TXD	8	CTS
4	DTR	9	RI
5	GND		



COM2 port (RS-485→ 2 Wire)

Pin No.	Function	Pin No.	Function
1	Data –	6	NA
2	Data +	7	NA
3	NA	8	NA
4	NA	9	NA
5	NA		

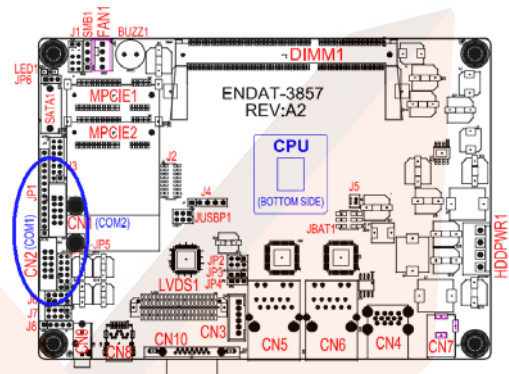
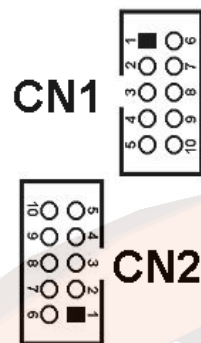


COM2 port (RS-422→ 4 Wire)

Pin No.	Function	Pin No.	Function
1	–TXD	6	NA
2	+RXD	7	NA
3	+TXD	8	NA
4	–RXD	9	NA
5	NA		

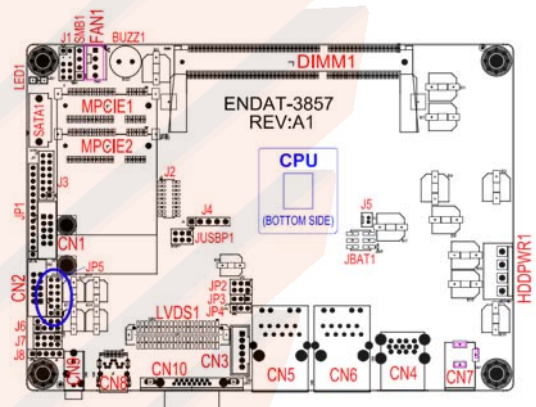
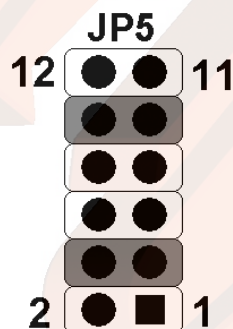
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JP5: COM Port Voltage Selector (2x6 with 2.0mm)

Voltage	+12V(DC)	R.I. *	+5V(DC)
JP5 (COM1)	1-2	3-4	5-6
JP5 (COM2)	7-8	9-10	11-12



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J6: LINE-IN & MIC-IN Header (2 x 4 with 2.0mm)

Pin No.	Signal (KB)	Pin No.	Signal (MS)
1	LINE_IN_R	2	MIC_R
3	JACK_DETECT	4	JACK_DETECT
5	GND_AUD	6	GND_AUD
7	LINE_IN_L	8	MIC_L

Notice: Please connect the jack detect pin to "GND_AUD" if the actual connector cannot support the jack detect function!

J7: Speak Out(amplifier), Line-OutPin Header (2 x 4 with 2.0mm)

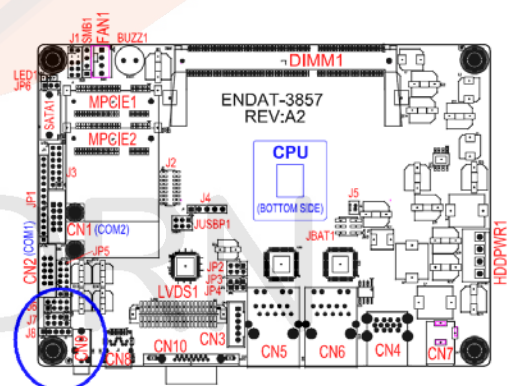
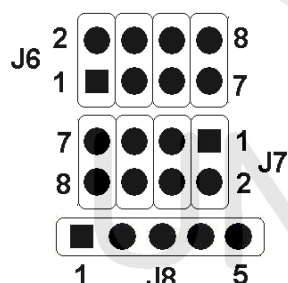
Pin No.	Signal (KB)	Pin No.	Signal (MS)
1	FRONT_L	2	LINE_OUT_L
3	JACK_DETECT	4	JACK_DETECT
5	GND_AUD	6	GND_AUD
7	FRONT_R	8	LINE_OUT_R

Notice: Please connect the jack detect pin to "GND_AUD" if the actual connector cannot support the jack detect function!
Sepak out and Line out can't be used.

J8: SPDIF Header (1 x 5 with 2.0mm)

Pin No.	Signal (KB)	Pin No.	Signal (MS)
1	+5V	4	GND
2	N.C	5	SPDIF-IN
3	SPDIF-OUT		

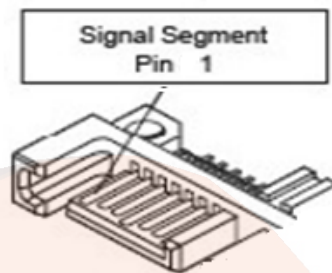
CN9: HD Audio jack Connector



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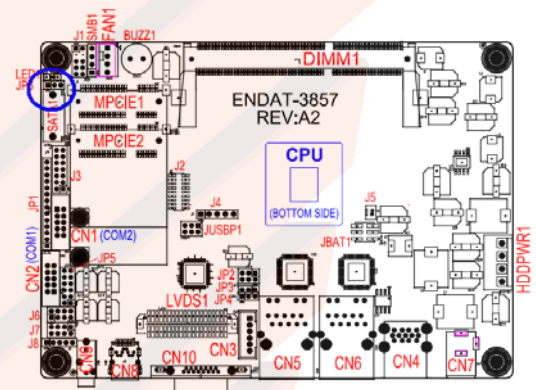
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SATA Connector :



JP6: SATA Port Pin7 Select +5V/GND (1x3 with 2.0mm)

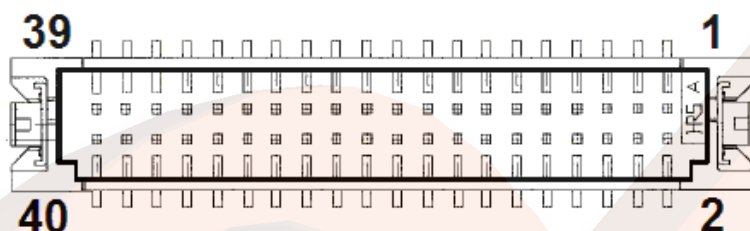
SATA Port	GND *	+5V
SATA1	1-2	2-3



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LVDS1: Single/Dual Channel LVDS(18/24/36/48 bit only, 1.25mm)
MB: DF-13A-40DP-1.25V / Map: DF13-40DS-1.25C



Pin No.	Signal	Pin No.	Signal
1	VBL	2	VBL
3	GND	4	GND
5	BLN	6	GND
7	LCD-PWR	8	LCD-PWR
9	GND	10	GND
11	Odd 0+	12	Odd 0-
13	Odd 1+	14	Odd 1-
15	Odd 2+	16	Odd 2-
17	Odd 3+	18	Odd 3-
19	Odd CLK+	20	Odd CLK -
21	GND	22	GND
23	Even 0+	24	Even 0-
25	Even 1+	26	Even 1-
27	Even 2+	28	Even 2-
29	Even 3+	30	Even 3-
31	Even CLK+	32	Even CLK-
33	LCD-PWR	34	LCD-PWR
35	GND	36	GND
37	GND	38	GND
39	VBL	40	VBL

Please make sure the Pin 1 location before plug-in LCD connector.
Please leave pin 23rd ~ pin 32nd unconnected if the single channel LVDS function is needed.

Please double check "jumper setting & LCD cable's orientation" before power-on, any incorrect installation may caused damaged of the LCD.

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JP2: LCD Voltage Select (2x3 with 2.0mm)

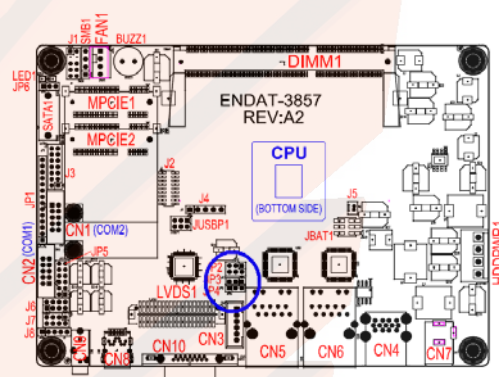
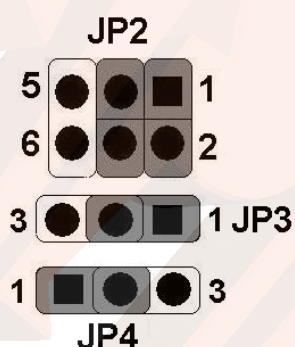
Voltage	+3.3V *	+5V	+12V
JP2 (LVDS1)	1-2	3-4	5-6

JP4: LCD Backlight Voltage Select (1x3 with 2.0mm)

Voltage	+5V *	+12V
JP4 (LVDS1)	1-2	2-3

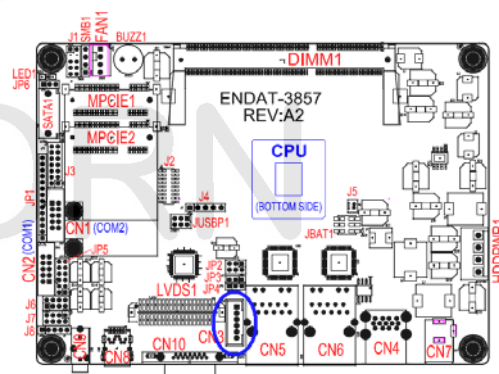
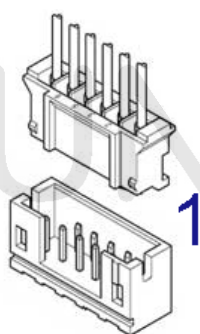
JP3: LCD Backlight Control Voltage Select (1x3 with 2.0mm)

Voltage	+3.3V *	+5V
JP3 (LVDS1)	1-2	2-3



CN3: LCD Backlight Control Connector (Map: PHR-6)

Pin No.	Signal
1	GND
2	LVDS_BKLT_CTRL
3	PWRDN
4	BLUP
5	BLDN
6	GND



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Notice:

PWRDN for Backlight On/Off Control:

When receiving active low pulse (0V) from this pin3 (PWRDN).

Example:

Using button switch on Pin1_GND & Pin3_ PWRDN.

LVDS_BKLT_CTRL for backlight brightness dimming:

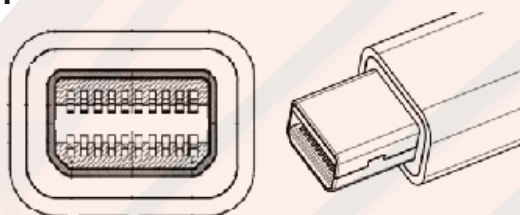
PWM duty cycle range: from 30~100%, the output frequency from PWM Out can be up to 400 kHz and Voltage level is +3.3V

Example:

Using button switches on “Pin6_GND & Pin4_ BLUP” and “Pin6_GND & Pin5_ BLDN”.

The Pin2_ LVDS_BKLT_CTRL connect to LCD Panel Backlight Dimming Pin (Sample: AUO G190EG02_V1)

CN8: Mini DP Connector



Notice:

DP dongle converter

The ENDAT-3857 supports DP port for digital display output, please note the dongle should connect either passive(recommend) or active type .

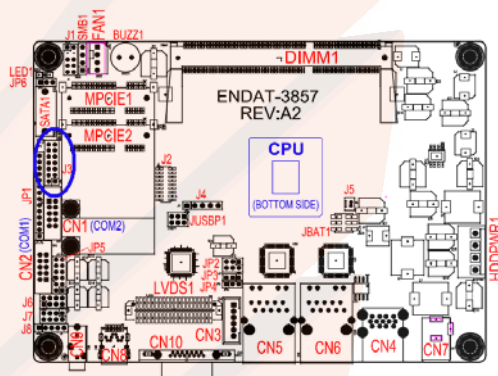
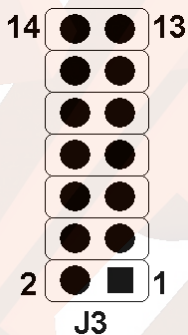
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J3: Digital I/O Header (2x7 with 2.0mm)

Pin No.	Function	Pin No.	Function
1	+5V	2	+5V
3	DIO-OUT0	4	DIO-IN0
5	DIO-OUT1	6	DIO-IN1
7	DIO GND	8	DIO GND
9	DIO-OUT2	10	DIO-IN2
11	DIO-OUT3	12	DIO-IN3
13	+3.3V	14	+3.3V

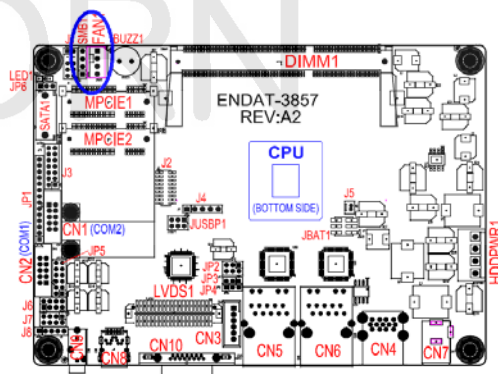
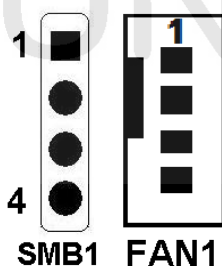


SMB1: SM BUS Header (1 x 5 with 2.0mm)

Pin No.	Signal (KB)	Pin No.	Signal (MS)
1	SMB_CLK	4	SMB_DATA
2	+3.3V	5	GND
3	IR_RX		

FAN1: Cooling Fan Connector

Pin No.	Signal
1	GND
2	+12V
3	Sensor Pin
4	PWM(Fan1 Only)

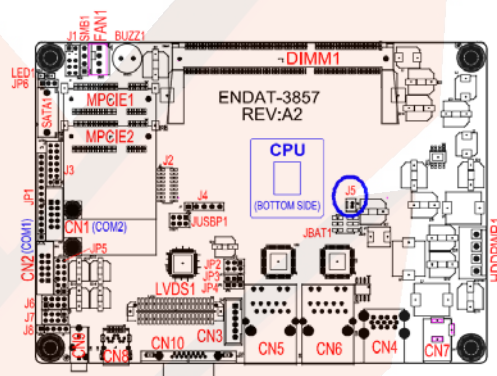
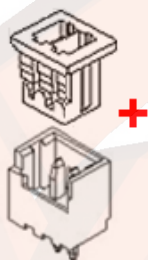


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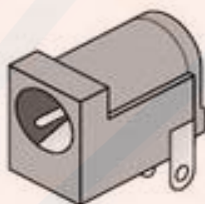
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J5: Battery connector (1x2 1.25mm)

Pin No.	Signal
1	+V
2	GND




CN7: Power input 9KD-014A-L (2.5mm DC JACK)

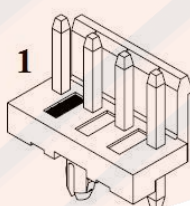


HDDPWR1: DC Output connector (1x4 with 3.96mm)

Pin No.	Signal
1	+12V
2	GND
3	GND
4	+5V



A 3D perspective diagram of a 4-pin connector. The pins are numbered 1, 2, 3, and 4 from left to right. Pin 1 is the tallest, pin 2 is shorter, pin 3 is the same height as pin 2, and pin 4 is the shortest. The connector has a rectangular base with a notch on the left side.



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2-2. Installing Memory

The DDR3L SO-DIMM socket of ENDAT-3857 supports up to 8GB memory. The speed of DDR3L memory can be DDR3-1333.

2-3. Shared VGA Memory

The ENDAT-3857 built-in Intel® Atom™ SoC integrated Gen7 4EUs Gfx graphic engine with DVMT 4.0 up system memory. The amount of video memory on motherboard determines the number of colors and the video graphic resolution.

2-4. Watch Dog Timer

Watch dog Timer (WDT) is a special design for system monitoring to secure the system work normally. WDT has an independent clock from the oscillator and could set time and clear/refresh WDT counter function. When time is up, WDT will send hardware RESET signal to reset system.

Timeout Value Range

-1 to 255

-Second or Minute

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Sample code (using TurboC/C++ 3.0):

```
#include <stdio.h>
#include <dos.h>
#include <dir.h>
void show_ver();
void main()
{
    unsigned int tt;
    clrscr();
    show_ver();
    tt=0;
    while((tt==0)|| (tt>255))
    {
        printf("\n\nPlease key in how many seconds you want to reset system (1~255):");
        scanf("%d",&tt);
    }
    outportb(0x2e,0x87);    //Unlock register
    outportb(0x2e,0x87);    //Unlock register
    outportb(0x2e,0x07);    //set Logic Device number pointer
    outportb(0x2f,0x08);    //set Logic Device number
    outportb(0x2e,0x30);    //set WDTO active
    outportb(0x2f,0x01);    //set reg value active (bit0 =1 active,0 inactive )
    outportb(0x2e,0xf2);    //set WDTO Control Mode
    outportb(0x2f,0x00);    //set register value Default :00h
                           //bit7 Mouse interrupt reset enables watch-dog timer reload
                           // 0: Watchdog Timer I is not affected by mouse interrupt.
                           // 1: Watchdog Timer I is reset by mouse interrupt.
                           // bit6 Keyboard interrupt reset enables watch-dog timer reload
                           // 0: Watchdog Timer I is not affected by keyboard interrupt.
                           // 1: Watchdog Timer I is reset by keyboard interrupt.

    outportb(0x2e,0xf0);    //set WDTO Control Mode
    outportb(0x2f,0x00);    //set register value Default :00h
                           // (bit3=1: minute. =0: second)

    outportb(0x2e,0xf1);    //set WDT Counter
    outportb(0x2f,tt);      //set time out value of WDT
}

void show_ver()
{
    unsigned char tmp0;
    printf("Designed by attila of UNICORN computer corp. \n2014/10/10 release
version:1.0a\n");
    printf("This program is design for test Watch Dog Timer for ENADT-3857 (NCT6106D).\n");
}
```


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2-5. Digital I/O

Pin define:

J2: Digital I/O Header (2x7 with 2.0mm)

Pin No.	Function	Pin No.	Function
1	+5V	2	+5V
3	DIO-OUT0	4	DIO-IN0
5	DIO-OUT1	6	DIO-IN1
7	DIO GND	8	DIO GND
9	DIO-OUT2	10	DIO-IN2
11	DIO-OUT3	12	DIO-IN3
13	+3.3V	14	+3.3V

Digital I/O port address:

This function is support by onboard super I/O chip; it can be control easily by change the register of super I/O chip via I/O port “2Eh” and “2Fh”. Please see the sample code of below for implement. Voltage tolerance: +/- 5% with 0V to +5V.

Sample code for input (using Turbo C/C++ 3.0):

bit No	7	6	5	4	3	2	1	0
Map	DIO-I3	DIO-I2	DIO-I1	DIO-I0	NA	NA	NA	NA

Sample code for input (using Turbo C/C++ 3.0)

```
#define input_port 0x2f // Digital input data port
Unsigned char read_data;
outportb(0x2e,0x87); //Unlock register
outportb(0x2e,0x87); //Unlock register
outportb(0x2e,0x07); //set Logic Device number pointer
outportb(0x2f,0x07); //set Logic Device number
outportb(0x2e,0x30); //set Device Active
outportb(0x2f,0x04); // set Bit 2 =GPIO2 ; 0=Inactive / 1= Active Default: FCh
outportb(0x2e,0xE8); // set GPIO Output / Input Port
outportb(0x2f,0xF0); // 0=Output/ 1=Input
// Bit 0~3 DIO-I0~ DIO3 / Bit4~7 DIO-I0~DIO-I3.

outportb(0x2e,0xE9); //Read DIO-Input register.
//Bit7~Bit4 = DIO-I3~DIO-I0.(Read Only)

read_data=inportb(input_port); // Read digital input data
printf("DIO-Input=%02X\n",read_data); //Show digital input data on screen
```

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Sample code for output (using Turbo C/C++ 3.0):

bit No	7	6	5	4	3	2	1	0
Map	NA	NA	NA	NA	DIO-03	DIO-02	DIO-01	DIO-00

Sample code for output (using Turbo C/C++ 3.0)

```

outportb(0x2e,0x87); //Unlock register
outportb(0x2e,0x87); //Unlock register
outportb(0x2e,0x07); //set Logic Device number pointer
outportb(0x2f,0x07); //set Logic Device number
outportb(0x2e,0x30); //set Device Active
outportb(0x2f,0x04); // set Bit 2 =GPIO2 ; 0=Inactive / 1= Active Default: FCh
outportb(0x2e,0xE8); // set GPIO Output / Input Port
outportb(0x2f,0xF0); // 0=Output/ 1=Input
// Bit 0~3 DIO-00~ DIO3 / Bit4~7 DIO-I0~DIO-I3.
outportb(0x2e,0xE9); //Read DIO-Input register.
outportb(0x2f,0xnm); // n=DIO-I0~DIO-I3 / m=DIO-00~DIO-03.
                        Bit7~Bit3 = DIO-I3~DIO-I0.(Read Only)

```

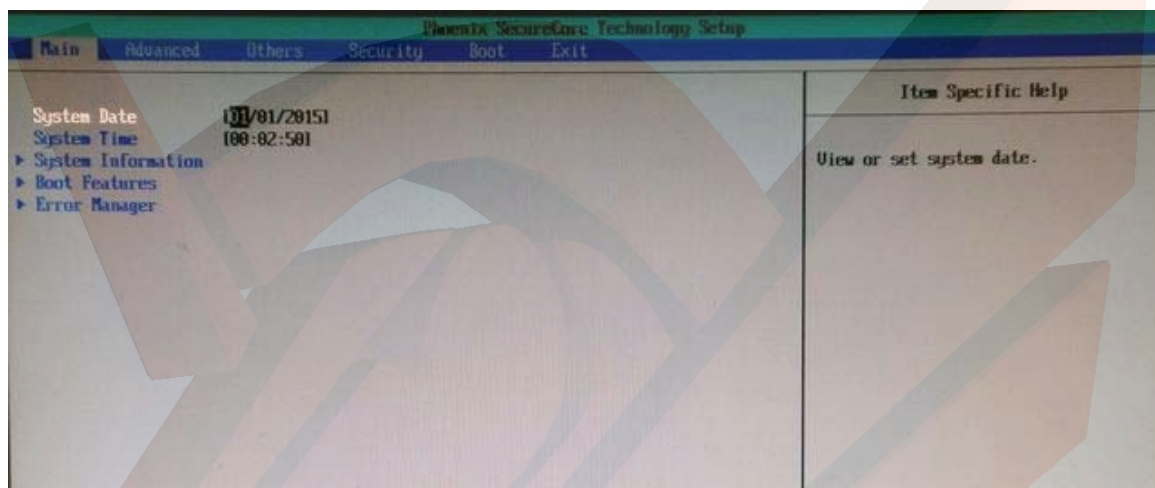
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Chapter 3. Phoenix UEFI BIOS SETUP

BIOS menu screen



Setup Menu

The menu bar on top of the screen has the following main items:

- > Main For changing the basic system configuration.
- > Advanced For changing the advanced system setting.
- > Super IO For changing the system IO configuration.
- > Security For changing the security system setting.
- > Boot For changing the system boot configuration.
- > Exit For select the exit options and loading default setting.

Use the BIOS CMOS setup program to modify the system parameters to reflect the environment installed in your system and to customize the system as desired. Long Press the <F2> key to enter into the BIOS CMOS setup program when you turn on the power. Settings can be accessed via arrow keys. Press <Enter> to choose an option to configure the system properly.

In the main menu, press F10 or "SAVE & EXIT SETUP" to save your changes and reboot the system. Choose "Exit Saving Changes" to ignore the changes and exit the setup procedure. Pressing <ESC> at anywhere during the setup will return to the main menu.

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All of the above CMOS BIOS items require board knowledge on PC/AT system architecture. Incorrect setup could cause system malfunctions.

Navigating Setup Menus and Fields

Navigation (moving your cursor around, selecting items, and changing them) is easy in Setup.

Following setting belongs to standard function setting:

Main Menu

The Standard Setup is used for the basic hardware system configuration. The main function is for Data/Time and Hard Disk Drive settings.

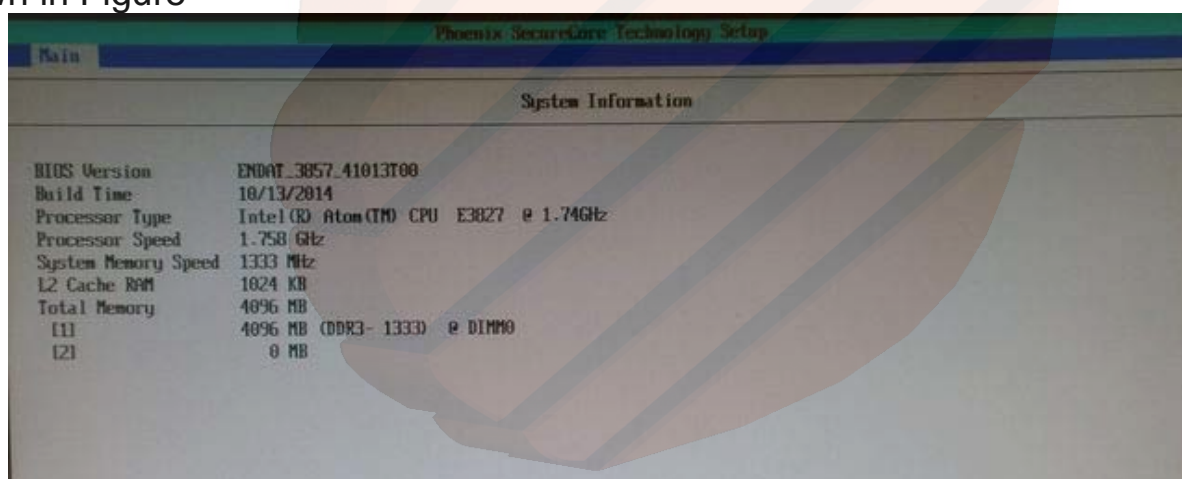
System Date (mm:dd:yy)

System Time (hh:mm:ss)

Allows you to set the system date and time
(Use the TAB and BACKTAB (SHIFT + TAB) keys.)

System Information

This submenu provides information about the system BIOS, CPU, and memory, as shown in Figure



The following table describes the settings associated with the **Boot Features**.

Quick Boot	Enables OEM Logo
Diagnostic Splash Screen	Enables graphical POST, including animation, sound, icons, advertisements, and other multimedia objects that may be configured by the OEM.
Diagnostic Summary Screen	Enables the diagnostic summary screen.
UEFI Boot	Enables the Unified Extensible Firmware Interface.
Legacy Boot	Enable this option to bypass some drivers and speed up POST.

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Advanced Menu

The following table describes the settings associated with the **CPU Configuration menu**.

Intel SpeedStep Technology	Intel SpeedStep technology is Intel's new power saving technology. Processors can switch between multiple frequencies and voltage points to enable power saving. The default value is [Enabled]. Configuration options: [Enabled] and [Disabled]. If you install Windows R 8 / 8.1 and want to enable this function, please set this item to [Enabled]. This item will be hidden if the current CPU does not support Intel SpeedStep technology.
C-States	Enable CPU C States Support for power saving. It is recommended to keep C3, C6 and C7 all enabled for better power saving.

The following table describes the settings associated with the **Graphics Configuration menu**.

IGD – Boot Type	Select the Video Device activated during POST. This has no effect if external graphics are present.
IGD – Secondary Boot Type	Select the Video Device activated during UEFI POST , MS-DOS & Linux Not Support .
LVDS Active	En/Disable DP Port LVDS
Panel Resolution	Select LCD (DP LVDS) resolution. 800x600x18bit, 1024x768x18bit, 1024x768x24bit, 1280x768x18bit, 1280x800x18bit, 1280x960x18bit 1280x1024x48bit, 1366x768x18bit 1366x768x24bit, 1440x900x48bit, 1400x1050x48bit, 1600x900x48bit 1680x1050x48bit, 1600x1200x48bit 1920x1080x48bit, OEM Resolution.
Integrated Graphics Device	Onboard Graphics Device En/Disable
Primary Display Selection.	Select the primary display port device.
Aperture Size	Select the Onboard Graphics Device base Memory size.
Spread Spectrum clock	En/Disable clock chip spread spectrum feature.

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The following table describes the settings associated with the **South Cluster Configuration menu**.

PCI Express Configuration	
PCIe 0 ~ 3 Speed	Configuration PCIe Speed Type
PCI Express Root Port 0 , 3 , 4	Control the PCI Express Root Port
USB Configuration	
Wake-up By USB	En/Disable Wake-up By USB Keyboard/Mouse
xHCI Mode	USB3.0 Support.
USB OTG Support	USB OTG Support.
EHCI Controller	Control the EHCI (USB2.0 PORT) Support.
Audio Configuration	
Azalia Device	En/Disable HD Audio
Storage Configuration	
SATA Controller	En/Disable SATA Port
SATA Mode	Select the SATA controllers operation mode.
LAN Configuration	
LAN2 Controller	LAN2 Device En/Disable
Wake On LAN Enable	Wake On LAN Support
PXE ROM	Boot On LAN PXE ROM

Others Menu

The following table describes the settings associated with the **SIO Configuration**.

Hardware Monitor	
Smart Fan Feature	Setting CPU Fan
Super IO Configuration	
Serial Port	Setting Serial Port 1~2
COM2 Type	Select Serial 2 type: RS232, RS485, RS422.
UART2 Termination	For RS485, RS422 Termination.
Paraller Port	Setting Paraller Port
Watch Dog Timer Select	Select SIO Watch Dog Timer
Power Failure – Power Control	Select Always On/Off, Former State.
Advanced Power Management	
Power On By Alarm	RTC Wake Up Setting.

Security Menu

The following table describes the settings associated with the **Security Configuration**.

Set Supervisor Password	Set BIOS Setup Password .
-------------------------	---------------------------

Boot Menu

This submenu provides information about the Boot devices boot priority.

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Chapter 4. VGA, DP Port and drivers

4-1. Graphic controller Feature

The ENDAT-3857 integrated a high performance Intel® Atom™ SoC integrated Gen7 4EUs Gfx engine. Support Microsoft DirectX11, OpenGL3.2, OpenCL1.1, OpenCL2.0 on Windows, and Full HW acceleration, decode: H.264, MPEG2/4, VC-1, WMV9. Encode: H.264, MPEG2

GPU Type: HD

Base frequency (MHz): 542

Maximum frequency (MHz): 792

The build-in Graphics Controller's main features include:

- Hardware frame buffer compression improves UMA (Unified Memory Architecture) memory efficiency
- VGA resolution up to 1920 x 1200
- Mini DP (DP Port B)
- LVDS (DP port C) resolution up to 1920x1080

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4-2. Driver Utility Installation Guide

1. When finishing the installation of Microsoft Windows System, please install the relative Intel® chipsets (INF), display and AUDIO driver manually for compliance compatibility of hardware environment.
2. Please contact sales department of UNICORN for Embedded OS user driver (Linux, Windows CE and Windows Embedded). All of embedded OS driver is not be included in any versions of driver CD-ROM from UNICORN.

Please download or check from Intel® web site: www.intel.com for more information or last versions of driver as needs!

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Appendix A: FLASH MEMORY UTILITY

Using this package to update the system BIOS from a disk file to the on board Flash memory. Be aware any improper update of the system BIOS will cause the malfunction of the system.

Method of update BIOS:

1. Please contact one of the Sales Representative on behalf of Unicorn to acquire "BIOS update package", and process following procedures for the BIOS UPDATE.
2. Unzip "BIOS Update package" into the root bootable storage.
3. Boot to Shell mode.
Please skip "Disk error" and press any key to restart to shell mode.
4. Shell mode command :
 - a. fs0: (switch to the root of the USB flash drive.)
 - b. Type the " Update " command to start flash BIOS processes.
5. Once the BIOS is Flash successfully, Reboot the system.
6. Press <F2> to enter BIOS Setup, Load BIOS setup default <F9>, save BIOS default and exit <F10>.

*** Please turn off system and clear CMOS data by JBAT1.**

*** Please restart your system and load setup default.**

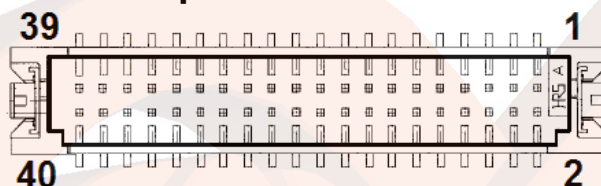
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Appendix B: LVDS PIN ASSIGNMENT

LVDS1: Single/Dual Channel LVDS(18/24/36/48 bit only, 1.25mm)
MB: DF-13A-40DP-1.25V / Map: DF13-40DS-1.25C



Pin No.	Signal	Pin No.	Signal
1	VBL	2	VBL
3	GND	4	GND
5	BLN	6	GND
7	LCD-PWR	8	LCD-PWR
9	GND	10	GND
11	Odd 0+	12	Odd 0-
13	Odd 1+	14	Odd 1-
15	Odd 2+	16	Odd 2-
17	Odd 3+	18	Odd 3-
19	Odd CLK+	20	Odd CLK -
21	GND	22	GND
23	Even 0+	24	Even 0-
25	Even 1+	26	Even 1-
27	Even 2+	28	Even 2-
29	Even 3+	30	Even 3-
31	Even CLK+	32	Even CLK-
33	LCD-PWR	34	LCD-PWR
35	GND	36	GND
37	GND	38	GND
39	VBL	40	VBL

Please make sure the Pin 1 location before plug-in LCD connector.
Please leave pin 23rd ~ pin 32nd unconnected if the single channel LVDS function is needed.

Please double check "jumper setting & LCD cable's orientation" before power-on, any incorrect installation may caused damaged of the LCD.

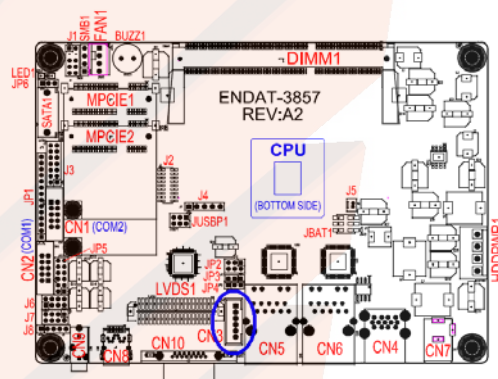
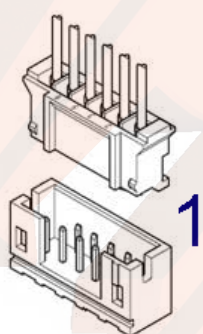
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Appendix C: CH7511B Backlight Control

CN3:LCD Backlight Control Connector (Map: PHR-6)

Pin No.	Signal
1	GND
2	LVDS_BKLT_CTRL
3	PWRDN
4	BLUP
5	BLDN
6	GND



Notice:

PWRDN for Backlight On/Off Control:

When receiving active low pulse (0V) from this pin3 (PWRDN).

Example:

Using button switch on Pin1_GND & Pin3_ PWRDN.

LVDS_BKLT_CTRL for backlight brightness dimming:

PWM duty cycle range: from 30~100%, the output frequency from PWM Out can be up to 400 kHz and Voltage level is +3.3V

Example:

Using button switches on “Pin6_GND & Pin4_ BLUP” and “Pin6_GND & Pin5_ BLDN”.

The Pin2_ LVDS_BKLT_CTRL connect to LCD Panel Backlight Dimming Pin (Sample: AUO G190EG02_V1)

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Appendix D: LIMITED WARRANTY

Standard Two years limited warranty on all our ENDAT series all-in-one motherboards and embedded board. Products that become defective during the warranty period shall be repaired, or subject to manufacturer's option, replaced. The limited warranty applies to normal proper usage of the hardware and does not cover products that have been modified or subjected to unusual electrical or physical stress. Unicorn Computer Corp is not liable to repair or replace defective goods caused by improper using or use of unauthorized parts. The following situations will be charged:

1. The products during the warranty but defective caused by improper using or artificial external pressure and result in the components damages. According to the damage situation, the manufacturer has the rights to decide to repair or not. The manufacturer will charge the parts/repair cost and the returning shipping charge.
2. The products out of warranty will charge the parts/repair cost and the returning shipping charge as per the repair status.
3. The manufacturer has the rights to decide to repair or not based on the stock of parts for the products which are phased out of the production.
4. Please e-mail or fax the RMA Service Request Form when have the defective products.



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RMA SERVICE REQUEST FORM

When requesting RMA service, please fill out this "RMA Service Request Form". This form needs to be shipped with your returns. Service cannot begin until we have this information.

RMA NO.:

Company:	Person to Contact:
Phone No:	Purchase Date :
Fax No. :	Applied Date :
Return Shipping Address:	

Model No.	Serial No.	Problem Description

Please specify the following when returning the RMA boards:

(1) Hardware Configuration (2) OS or Software (3) Testing Program

Authorized Signature